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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/766,031

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EXAMINER

LANDAU, MATTHEW C

ART UNIT

PAPER NUMBER

2815

MAIL DATE

DELIVERY MODE

07/25/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/766,031	<b>Applicant(s)</b> HATA ET AL.	
	<b>Examiner</b> Matthew C. Landau	<b>Art Unit</b> 2815	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-13 and 15-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4 and 6-12 is/are allowed.
- 6) ☒ Claim(s) 13, 15-22, 24 and 25 is/are rejected.
- 7) ☒ Claim(s) 23 and 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/19/07, 6/8/07, 7/11/07</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114.

Applicant's submission filed on April 19, 2007 has been entered.

### ***Allowable Subject Matter***

The indicated allowability of claims 18-26 is withdrawn in view of the newly discovered reference(s) to Yamaguchi and Nagahama. The indicated allowability of claims 13 and 15-17 is withdrawn in view of the newly present 112, 2<sup>nd</sup> paragraph rejections. Rejections based on the newly cited reference(s) follow.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 2815

Claims 13 and 15-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 13, the limitation “the high resistance region is formed separately from dislocations” renders the claim indefinite. It is unclear what structure is implied by the limitation “formed separately”. It is clear from the specification and drawings (Fig. 29) that the carbon containing high resistance region 120 is formed in the region of the dislocations. Therefore, it is unclear how the high resistance region can be formed separately. Does Applicant simply mean that the carbon containing region is formed in a different process step compared to the dislocations? Or is the limitation intended to mean the carbon containing region is physically formed in a different location? This would be indefinite since a previous limitation of the claim establishes that the high resistance region is formed “in said region of the front surface having said concentrated dislocations”. Note that although Figure 32 of the instant application shows a high resistance region 170 adjacent the dislocation region, this high resistance region is not described as containing carbon. Any attempt to claim the configuration of Figure 32 with carbon in the high resistance region would be considered new matter.

Regarding claim 18, the limitation “provided with a region of the front surface”, in lines 3-4 of the claim, render the claim indefinite. It is unclear if “the front surface” refers to the front surface of the substrate or a front surface of the semiconductor element layer. Only the front surface of the substrate was defined prior to this limitation. For the purposes of the below art rejections, it is considered that “the front surface” of the above noted limitation refers to a front surface of the semiconductor element layer.

### ***Claim Objections***

Claims 21, 22, and 24 are objected to because of the following informalities:

Regarding claim 21, the limitation “the front surface” lacks sufficient antecedent basis in the claim. Further, the limitation “a semiconductor element layer formed on said first region of the front surface of the substrate other than said second region provided with said region of the front surface having said concentrated dislocations” is objected to. There is insufficient antecedent basis for “said first region of the front surface of the substrate”. While a first region is defined, it is not defined in relation to a front surface of the substrate. It appears the majority of this limitation is redundant and unnecessary.

Regarding claim 22, the limitation “an active layer” is objected to. Claim 21 already defines an active layer. Therefore, the above limitation should be changed to “the active layer”.

Regarding claim 24, the limitations “the front surface” and “the front surface of said semiconductor element layer” lack sufficient antecedent basis in the claim.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 2815

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 18, 19, 21, 22, 24, and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamaguchi et al. (US PGPub 2001/0032975, hereinafter Yamaguchi).

Regarding claim 18, as best the examiner can ascertain the claimed invention, Figure 3 of Yamaguchi discloses a semiconductor element layer (107-114) formed on the front surface of a substrate 200 and provided with a region of the front surface having concentrated dislocations 116 at least on part of the front surface thereof while including an active layer 110; and a front electrode 105 formed to be in contact with a region of the front surface of said semiconductor element layer other than said region of the front surface having said concentrated dislocations, wherein the upper surface of said region of the front surface having said concentrated dislocations is partially removed by a prescribed thickness and located downward beyond said active layer.

Regarding claim 19, Figure 3 of Yamaguchi discloses the active layer 110 is formed in a region of the front surface of the semiconductor element layer other than said region of the front surface having said concentrated dislocations. Note that Fig. 3 shows the active layer 110 is formed in both the region with the dislocations, and the region without the dislocations.

Regarding claim 21, Figure 3 of Yamaguchi discloses a substrate 107/200 including a first region (region of layer 107) having a first thickness and a second region (region of layer 200 to the right of layer 107) provided with a region of the front surface having concentrated dislocations at least on part of the front surface thereof while having a second thickness smaller than said first thickness; a semiconductor element layer (108-114) formed on said first region of

Art Unit: 2815

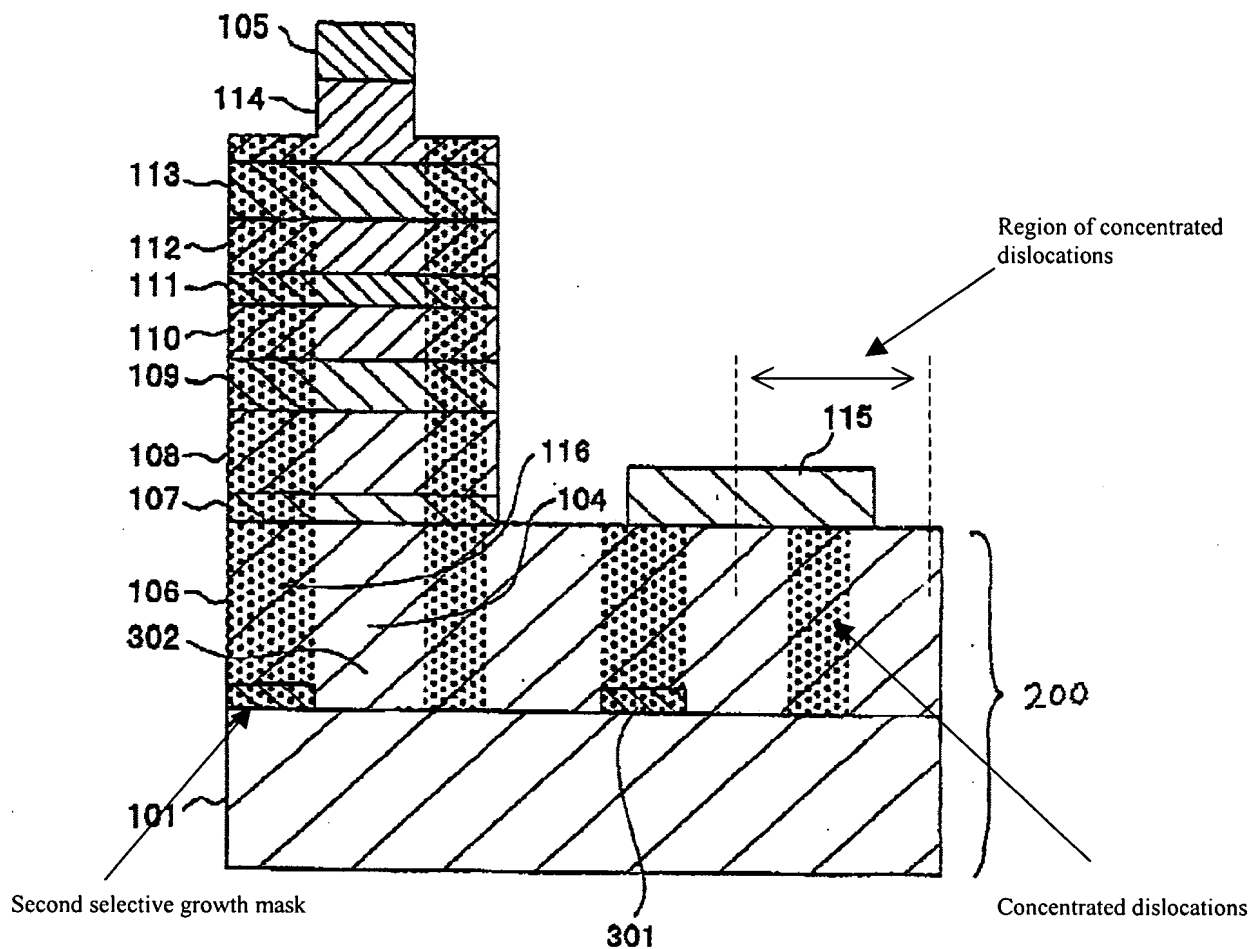
the front surface of said substrate other than said second region provided with said region of the front surface having said concentrated dislocations, said semiconductor element layer includes an active layer 110; and a front electrode 105 formed to be in contact with the front surface of said semiconductor element layer.

Regarding claim 22, Figure 3 of Yamaguchi discloses the semiconductor element layer includes: a first conductivity type (n-type) first semiconductor layer 108, an active layer 110 formed on said first semiconductor layer, and a second conductivity type (p-type) second semiconductor layer 111 formed on said active layer.

Regarding claim 24, Figure 3 of Yamaguchi discloses a substrate 200 provided with a region of the front surface having concentrated dislocations at least on part of the front surface thereof (see below figure); a first selective growth mask 301 formed on a region of the front surface of said substrate located inward beyond said region of the front surface having said concentrated dislocations with a width smaller than the width of said region of the front surface having said concentrated dislocations (see below figure); a semiconductor element layer (107-114) formed on a region of the front surface of said substrate other than a region formed with said first selective growth mask; and a front electrode 105 formed to be in contact with a portion of the front surface of said semiconductor element layer located inside said first selective growth mask. Note that “a region of the front surface having concentrated dislocations” can be any arbitrarily defined region of the substrate, as long as the region includes concentrated dislocations. The below marked up version of Yamaguchi’s Fig. 3 indicates what region is considered to be the claimed “region of the front surface”.

Art Unit: 2815

Regarding claim 25, Figure 3 of Yamaguchi discloses a second selective growth mask (see below figure) formed on a region located outward beyond said first selective growth mask at a prescribed interval from said first selective growth mask 301.





Art Unit: 2815

Claim 21 is rejected under 35 U.S.C. 102(b) as being anticipated by Nagahama (JP 2002-033512).

Regarding claim 21, Figure 4 of Nagahama discloses a substrate 18/16 including a first region (mesa portion of layer 18) having a first thickness and a second region (flat portion of layer 18) provided with a region of the front surface having concentrated dislocations 32 at least on part of the front surface thereof while having a second thickness smaller than said first thickness; a semiconductor element layer 20/22 formed on said first region of the front surface of said substrate other than said second region provided with said region of the front surface having said concentrated dislocations, said semiconductor element layer includes an active layer 20; and a front electrode 26/28 formed to be in contact with the front surface of said semiconductor element layer.

***Allowable Subject Matter***

Claims 1-4 and 6-12 are allowed.

Claims 13 and 15-17 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Claim 20 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Art Unit: 2815

Claims 23 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance:

Regarding claims 1 and 4, the prior art of record, either singularly or in combination, does not disclose or suggest the combination of limitations including the back electrode is a transparent electrode and light emitted from said LED is emitted outside through said back electrode.

Regarding claim 9, the prior art of record, either singularly or in combination, does not disclose or suggest the combination of limitations including an emission layer located inward beyond the region having the concentrated dislocations and the recess portion is formed between the emission layer and the region having the concentrated dislocations.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew C. Landau whose telephone number is 571-272-1731. The examiner can normally be reached on 9:00AM - 5:30PM.

Art Unit: 2815

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Matthew C. Landau  
Primary Examiner  
Art Unit 2815  
7/18/07